

REMARKS

A Request for Continued Examination (RCE) is being filed concurrently herewith.

Claims 1, 7 and 8 have been amended. Claims 1-8 are pending in the present application. Applicant reserves the right to pursue the original claims and other claims in this application and in other applications.

In the Final Rejection dated February 5, 2004, claim 8 was rejected under 35 U.S.C. § 102(e) as being anticipated by Abramson; claims 1, 3 and 5 were rejected under 35 U.S.C. § 103 as being unpatentable over Abramson in view of Glover; claims 2, 4 and 9 were rejected under 35 U.S.C. § 103 as being unpatentable over Abramson in view of Glover, and further in view of Tang; and claims 6 and 7 were rejected under 35 U.S.C. § 103 as being unpatentable over Abramson in view of Glover, and further in view of Quackenbush.

Applicant filed an Amendment on April 30, 2004. The Amendment canceled claim 9. The June 21, 2004 Advisory Action entered Applicant's Amendment, but maintained the outstanding rejections; claim 8, however, is now rejected for the reasons stated in the rejection of canceled claim 9.

Applicant respectfully submits that claims 1-8 are allowable over the cited references for at least the following reasons.

Claim 1, for example, recites an "arbitration method for operating a bus bridge which interfaces a primary-side bus with a plurality of secondary side buses." The bus bridge supports a plurality of kinds of operations, "one of which is an operation related to a serial bus in accordance with IEEE1394." The claimed method operates the bus bridge by "giving an access right equally to each of the secondary-side

buses, when access demands to the primary-side bus are lodged from more than two of the secondary-side buses at the same time, by not giving a priority to any one of the secondary-side buses.” According to claim 1, “access rights are provided sequentially to the more than two secondary-side buses lodging access demands and at a same rate of the lodged access demands.”

Applicant respectfully submits that Abramson and Glover, even when considered together, fail to teach or suggest the claimed invention. Specifically, the combination fails to teach or suggest an arbitration method where “access rights are provided sequentially to the more than two secondary-side buses lodging access demands and at a same rate of the lodged access demands” as recited in claim 1 and its dependent claims 3 and 5.

Abramson discloses a Host Bridge 115, a BIU 140, a USB 150 and 155, a PCI bus 130, a memory 120, and an arbitration method between two USBs. A USB arbiter couples a first USB host controller and the second USB host controller to a bus. The arbiter arbitrates between grant request signals from the first and second USB host controllers. Abramson does not teach or suggest arbitration between more than two secondary-side buses. As such, Abramson fails to disclose, teach or suggest the claimed method.

Moreover, Abramson fails to disclose, teach or suggest an arbitration method where “access rights are provided sequentially to the more than two secondary-side buses lodging access demands and at a same rate of the lodged access demands.” Abramson, by contrast, discloses two arbitration techniques. The first technique is a

ping-pong state machine method illustrated in Abramson's Figures 2A and 2B.

According to Abramson:

In a first state 202, the priority solver assigns a higher priority to first USB host controller 150 such that when a contention occurs, first USB host controller 150 will receive the grant. After first USB host controller 150 is granted access to the bus, state machine 200 transitions along transition path 204 to second state 208. USB priority solver state machine 200 remains in second state 208 until USB arbiter 145 grants second USB host controller 155 access to PCI bus 130. After second USB host controller 155 receives access to PCI bus 130, priority solver state machine 200 transitions along transition path 210 to initial state 202 wherein the first USB host controller 150 again has priority.

[Abramson Col. 4, ll. 4-16.]

As such, access is ping-ponged between a first USB controller and a second USB controller. This is not the same as the claimed invention because it can not provide access rights "sequentially to the more than two secondary-side buses lodging access demands and at a same rate of the lodged access demands" as required by claim 1.

The second Abramson technique, relied upon by the Final Rejection and the Advisory Action, is a "rotating arbitration" scheme that "selects subsequent USB host controllers in a predetermined sequence." Abramson, Col. 5, ll. 29-31. This rotating arbitration method maintains a strict order in which access rights are to be granted (i.e., USB controller 1, controller 2, controller 1, controller 2, controller 1, etc.). This is not the same as the claimed invention because it can not provide access rights "sequentially to the more than two secondary-side buses lodging access demands and at a same rate of the lodged access demands" as required by claim 1.

Furthermore, as noted in the Final Rejection, Abramson fails to teach or suggest an arbitration method in which the bus bridge supports a serial bus in

accordance with IEEE 1394. To overcome the deficiency, the Office Action relies on Glover. Glover discloses an integrated circuit for controlling the operation of a server hard disk and for processing digital data exchanged between a client and a storage media of the server hard disk drive. The circuit includes a data memory, a disk control circuitry, a write channel, a read channel, a servo unit, a motor control circuit and a digital signal processor. Although Glover mentions that an IEEE 1394 bus may be used to interface a hard disk drive integrated circuit, relied on by the Final Rejection, Glover does not teach or suggest an arbitration method for a system having an IEEE 1394 bus.

Furthermore, Applicant respectfully submits that Glover does not teach or suggest an arbitration method where “access rights are provided sequentially to the more than two secondary-side buses lodging access demands and at a same rate of the lodged access demands.” Thus, Glover and Abramson fail to teach or suggest the same limitation of claim 1. Accordingly, claim 1 is allowable over the cited combination.

Claims 3 and 5 depend from claim 1 and are allowable along with claim 1.

In the Final Rejection, claims 2, 4 and 9 were rejected under 35 U.S.C. § 103 as being unpatentable over Abramson in view of Glover, and further in view of Tang. The Advisory Action indicates that claim 8 is rejected for the reasons stated in the rejection of claim 9 (now canceled).

Claims 2 and 4 depend from claim 1 and thus recite “access rights are provided sequentially to the more than two secondary-side buses lodging access demands and at a same rate of the lodged access demands.” As set forth above, this is not disclosed, taught or suggested by the combination of Abramson and Glover. Applicant respectfully submits that Tang, which has been cited merely for teaching

card buses, fails to teach or suggest the limitation as well. As such, claims 2 and 4 are allowable for at least the reasons set forth above.

Claim 8 also recites “wherein access rights are provided sequentially to the more than two secondary-side buses lodging access demands and at a same rate of the lodged access demands.” As such, claim 8 is allowable for at least the reasons set forth above.

In the Final Rejection, claims 6 and 7 were rejected under 35 U.S.C. § 103 as being unpatentable over Abramson in view of Glover, and further in view of Quackenbush.

Claim 6 depends from claim 1 and thus recites “access rights are provided sequentially to the more than two secondary-side buses lodging access demands and at a same rate of the lodged access demands.” As set forth above, this is not disclosed, taught or suggested by the combination of Abramson and Glover. Applicant respectfully submits that Quackenbush, which has been cited merely for teaching a PCI bus, fails to teach or suggest this limitation as well. As such, claim 6 is allowable for at least the reasons set forth above.

Claim 7 recites an “arbitration method of a bus bridge which interfaces a primary-side bus with a plurality of secondary-side buses” where the primary side bus is “a local bus in a system and the secondary-side buses being external buses connected to the system.” According to claim 7, “at least one of the secondary-side buses [is] a serial bus in accordance with IEEE 1394.” The arbitration method comprises the step of “giving a highest priority to the primary-side bus when the primary side bus lodges an access demand to the secondary-side buses irrespective of a condition of an arbitration between the secondary-side buses.”

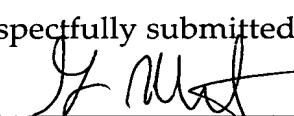
The combination of Abramson, Glover and Quackenbush does not teach or suggest the recited method because the references do not arbitrate between a primary bus, at least one IEEE 1394 bus and at least one other bus. As set forth above and in Applicant's prior Amendment, the references fail to teach or suggest an arbitration method for a serial bus in accordance with IEEE 1394. As such, they fail to account for the distinct difference in access requirements between a USB and IEEE 1394 serial bus. One such difference is the access time required for data transfer using an IEEE 1394 serial bus. Accordingly, a problem when using an IEEE 1394 serial bus is that it can prevent access rights from being granted to other secondary side buses. This problem is not fully appreciated by Abramson or the other references. Abramson merely has a register that limits the time a host controller can spend on the bus as an initiator and fails to teach or suggest the requirements needed to arbitrate between buses that are not USB buses. See Column 3, lines 34-36. In addition, USB buses do not support the same devices used by an IEEE 1394 bus. Therefore, the rejection should be withdrawn.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

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Respectfully submitted,

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